

(19)
(12)

(KR)
(A)

(51) 。 Int. Cl.⁷
G09G 3/20

(11)
(43)

2003-0084728
2003 11 01

(21) 10-2003-0025972
(22) 2003 04 24

(30) JP-P-2002-00125028 2002 04 25 (JP)

(71) 가 가 가 22 22

(72) 506-1- 205

(74)

:

(54)

DA , , , 가 , , 가 , y , 가 ,

1

1 가

2 .

3 .

4 .

5 .

6 .

7 1 .

8 6 .

9 , , .

10 .

11 10 .

12 10 .

13 .

14 .

15 가 .

16 15 가 .

17 가 DA .

18 y , .

19 .

20 , , 가 .

21 가 2

, (a)

, (b) (a)

22 가 .

1 :

2 :

2A :

3 :

3A :

4 :

5 :

6 : ()

7 : ()

21 :

EL(electroluminescent;)
 ,
 EL TFT(Thin Film Transistor; 가) ,
 .
 (related art) 13 TFT ,
 . TFT
 (901) .
 (901) , () (907) (902) ,
 IC(Integrated Circuit;) (903) (903A) ,
 (902A) , IC (904) , (905) , (907) (906)
 .
 (902) (903) , IC
 TCP(Tape Carrier Package;) (901) ITO(Indium Tin Oxide;
) , ACF(Anisotropic Conductive Film;
) , (901) ITO ,
 . 13
 (904) (, , , RGB) D
 (902) , (903) (90
 2) () ,
 , S1 , S2 (903) , IC
 .
 (905) (902) (903) (V
 R)
 (904) (902) D

4) (902) (904) D (90
 (902) DA LS(14)) DA(-)
) , (901) () (903)
 () ,
 14 (902) ,
 S (902) , (902)
 가
 (1014), (902) (1011), (1012), (1013),
 (1015), DA (1016), (1017), (1019)
 (904) () DR · DG · DB(, 6) ,
 (1011) DR · DG · DB , , ,
 , DR · DG · DB SP CK ,
 (1012) (1012) (1012) (9
 02) S((902) SP)
 (1012) (1011)
 4) DR · DG · DB (1013) , (101
 1 가 (1013) , (1014)
 (LS) (1013) , (101
 5) 가
 (1016) (1015) (901) 가 (1014) (가) , DA
 (1019) (905)(13) VR ,
 , DA (1016)
 DA (1016) (1019) ()
 , (1015) (1017) , (,)(10
 18) (901)
 (1017)
 ,
 (1019) DA (1016)
 ,
 15 , (1019) . RGB
 가 6 (18 V₀ V₆₃) , (1019) 2⁶=64
 64
 (1019) R₀ R₇ , 가

$R_0, R_7, \dots, R_{16}$, 8, 가 $R_{01}, R_{02}, \dots, R_{08}$, R_0
 $R_1, R_7, \dots, R_{16}$ (1019) 64 가 R_0 가, 8 가
(1019) 9 $V'_0, V'_8, \dots, V'_{56}, V'_{64}$ 9 가
 R_0 , R_0 , R_1 , V'_{56}
가
 $R_1, R_2, R_3, R_4, \dots, R_6, R_7$, $V'_{48}, V'_{40}, \dots, V'_8$
가 R_7 , R_6
 V'_0 가
 V'_0 , 64 가 $V_1, V_{63}, V'_0, V_{63}$
 V_0, V_{63} (1019)가 V_0 64
(1019) DA (1016)
 V'_{56} 2, V'_0, V'_{64} 가 V'
8, 7, 7
, DA (1016) 17, DA (1016)
(1017)
DA (1016) 6, 64 V_0, V
63 1 가 가, 6
(Bit0 Bit5) 가 / 64 1
가 (1017) MOS(metal oxide semiconductor)
6 () Bit0 (LSB; Least Significant Bit), Bit5가 (MS
B; Most Significant Bit) (,) 2 1
. Bit0 32 (64), Bit1 16 (32)
, Bit 가 2 1, Bit5 1 (2) , 2⁵
+2⁴ +2³ +2² +2¹ +1=63 (126)
Bit0 V_0, V_{63}
2 1, Bit1 Bit5
, Bit5 1 (1017)
Bit0 Bit5, SW_0, SW_5
6 () Bit0 Bit5, SW_0, SW_5
Bit가 0(Low) 2 1 () ON
, Bit가 1(High) () ON
Bit0 Bit5가 (111111) , 가 , 가
, DA (1016) V_{63} (1017)

가 , Bit0 Bit5가 (111110) , DA (1016) V₆₂가 (1017)
 , (000001) V₁ , (000000) V₀ ,
 V₀ V₆₃ 가 , 가 .
 (1016) (1019) 1 (1018) IC 1 , , DA
 (1017) (1018) 1 1 가 . DA (1016)
 , (1017) , 1 1 가 .
 , (901) () 가 N , , , (1018) ,
 R, G, B n(n=1, 2, ..., N) , (1018) R₁, G₁, B₁, R₂, G₂, B₂,
 ..., R_N, G_N, B_N , , 3N DA (1016) (1017)가 .
 ,
 (2000)6 30)(6, 373, 419) 「 2000-183747 」 (: 12
 ,
 (1019) , , Y , Y ,
 18) Y , 18 () (,
 8 , 15 (1019) R₀, ..., R₇ Y R₀, ..., R₇
 , R₀ 8 R₀₁, R₀₂, ..., R₀₈ R₀, R₁, ..., R₇ , Y
 , Y
 (901) , () ,
 ,
 (901) () , 6 5 , 6 5
 가 .
 , , ,
 19 S11a S11f (903) 6
 20 S11a S11f
 S11 , (902) 5 S12 ,
 (907) 가 S13 .
 19 20 .
 S11a S11f CH , WH S11a
 S11f가 , , 가 , TFT
 , 가 .

(907) 가 , S13 (907) (5V) WH (5V) GND WH (0V) , (, S13) , S12((902)) (907) 가 S13 S12 , WH 가 , S12a , 가 , S12b , 가 S12a S12b , , (907) 가 S13 S14a · S14b S12b가, (907) (S13) S14a · S14b가 , (가) (907) (S13) , S14a · S14b가 (907) (S13) 가 , (907) , (907) 21 (a) 가 , (901) , (,) , , (a) 6 5 , (901) 1 TFT , 「 + 」 () , 「 - 」 () , TFT , , , , () , , (1019) , 가 , y (18) (902) , (902) (901) (1019) (902) (1) (1) y (902) 가 .

가 () 가 가 (902) V' 0

가 가

가

() Y (

가 Y

가 가

() Y

가

1

1 9

2 TFT()

13 가 TFT ()(1)

(1) () (7) (2) (2A) (3) (3A) (4) (5) (2) (21) () () (6) (7) (2) (3) IC IC 가 (1) ITO

CP((1) IC T
(2) ACF((1) (1)
(2) IC ACF((1) (1)
(2) (14), (15), (16), (12), (21)가, (13),
(19), (20)) , (21)가, IC (17), DA (18),
(4) , ((, , , RGB) D (2)
(2) , (3)
(,),
(3)
, S1 , S2 , IC
(5) VCC (2) Vcom (3) , (1) ((4)
(4) (2) D
(2) (4) D (4)
(2) (4) LS(3)) DA(- ;) (4)
(2) DA () (34) () ,
(1) () (35) (3)
() (35)
(1) , 3
(1) (31), (32), (32) 가 /
TFT(33), () (34), (35), (7) . 3 A
(34) (2) ((TFT(33)가 ,
() (35) (3) ,
()가
TFT(33) , TFT(33) (31) (34) (32) 가 (31) (32))
(31) (7) , 가
4 5 , (101, 111)
(2) () (102, 112) (3) (104, 114) (7)
(31) (103, 113) (7) (32)) 가 (31) (7)
(31) (112) (3) 가 High TFT(33)
(111) (2) (112) (3) (113) 가
(32) 가 , (32) 가 (31) Low
(111) (2) () , (32)) 가 5 가

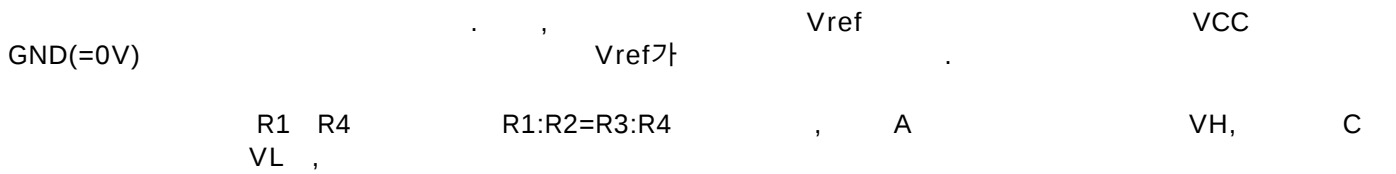
[illegible]

3 V₋₀

(413)

(412 · 413) (4) PLO REV
 , (412) (413) ()
 가 가 (412 · 413) REV
 () , (412 413)
 .
 (412) 가 REV가 SA ,
 (413) 가 SB , PLO
 SA (419)가 가 .
 (412, 413) PLO REV
 ('High' 'Low') (412 · 413) SA
 SB (ON) , (OFF)
 SA · SB 'High' REV(가) SA · SB
 가 (412 · 413) 가
 SA · SB 가 .
 (412) Vref REV Y SA
 RP0 RP5 , RP0 RP5 ()
 . RP0 RP5
 (414) RP0 RP5 , RP0 (411)
 가 , RP0 RP1 RP1 RP4
 RP2 RP4 , 16 RP1 15 ()가
 RP4 RP5 RP5 RP5 SA
 (415)
 , (412) 65 가
 , (412) 가 , (413) ,
 가 Y SB RN0 RN5 , REV
 RN0 RN5 , RN0 RN1 (415) 가
 RN0 RN1 RN1 RN4 ()가 RN4 RN5
 RN2 RN4 , 16 RN1 15 ()가 RN4 (414)
 RN5 SB
 , (413) , 65 가
 , (416) , 7
 (416) (5) GND() 4
 A VH () (1) R1 , (416) Vcc ()
 4) R3, (2) R2, Vref GND () C Vref () B
 VL (3) R4
 R1 R4 R1 R1, R2 R2, R3 R3,
 R4 R4 ,

R1:R2=R3:R4



$$VH = Vref + (VCC - Vref) \times R2 / (R1 + R2)$$

$$= Vref \times R1 / (R1 + R2) + VCC \times R2 / (R1 + R2)$$

$$VL = GND + (Vref - GND) \times R3 / (R3 + R4)$$

$$= GND \times R4 / (R3 + R4) + Vref \times R3 / (R3 + R4)$$

$$= GND \times R2 / (R1 + R2) + Vref \times R1 / (R1 + R2)$$

가 , VH VL () ,

$$VH - VL = (VCC - GND) \times R2 / (R1 + R2)$$

, Vref .

VH , Vref
VL , , 가 .

1:9, R3:R4=1:9 , VCC=5V, GND=0V, Vref=2.5V , 7 R1 R4 R1:R2= VH, VL, VH

$$VH = Vref + (VCC - Vref) \times R2 / (R1 + R2)$$

$$= 2.5V + 2.25V$$

$$= 4.75V$$

가 VL ,

$$VL = GND + (Vref - GND) \times R3 / (R3 + R4)$$

$$= 0V + 0.25V$$

$$= 0.25V$$

가 VH VL ,

$$VH - VL = 4.75V - 0.25V = 4.5V$$

가 .

, Vref 3.0V , VL (VCC=5V, GND=0V) VH, VL, VH , VH

$$VH = Vref + (VCC - Vref) \times R2 / (R1 + R2)$$

$$= 3.0V + 1.80V$$

=4.80V

가 VL

$$VL = GND + (V_{ref} - GND) \times R3 / (R3 + R4)$$

$$= 0V + 0.30V$$

$$= 0.30V$$

가 VH VL ,

$$VH - VL = 4.80V - 0.30V = 4.5V$$

가

ef H , , 64 (VH-VL) , Vref V +0 V +63 V -63 V -0 (가 VL Vr V

, (416) B(7) Vref 1 가 , (417)가 . (17) R1 R4 가 , (417) R1 R4 , (417) R1 R4 , (417) VH VL (Vref) R1 R4 , (416) (417) , , (416)

3), (20) (413) (412) (V +0 V +6 V -63 V -0) REV PLO , DA (18) . (1) (38) (34) . (38) (40)(,)

(20) REV 1 () (412) 가 V +0 V +63 PLO (413) REV 'High' 가 'High' , DA 가 (18) 가 , 1 , REV (20) 가 .

[1]

REV	
'Low'	V +0 V +63
'High'	V -0 V -63

DA (18) (17) () ,
 (16)

(19) , (22)(,
 (19)

DA (18) (19) , 가 , 17 DA
 (1016) (1017)가 . DA (1016) (1017)

(21) 8 , 2 (21a)
 (2) (21b) (21) PLO
 REV , (21b) (1)
 Vcom

(7)

(21) , () (21b)
 REV , (, (2) (21) ,
 (, () (16)) ,
 , (21b) 가
 , ()

(17) Vref 64 VH V +0 V +63 V -63
 (6) () ,
 V -0 가

64 V +0 V +63 V -63 V -0 ,
 (1) y (y) y

VH VL , y (17) (1
 7) Vref (412 · 413) VH VL , V
 ref (y) (y)

(2) VH VL 가 (1)
 y (y) (1) 가
 , 가 ()가 , 가
 y (1)

Lon, Loff , (Lon - Loff)/Loff ,

(17) (412 · 413) (416)
 Vref V +0 V +63 V -63 V -0
 15 가 (1019) 9

Vref(V0 V64 VCC) (17)
 (17) (2)가 가
 , 1 가

V_{+63} , V_{-63} , V_{-0} (17) V_{+0} (17)
 가 , V_{ref} (6) , V_{re}
 64 , V_{+0} , V_{+63} , V_{-63} , V_{-0} ,
 f
 (21)가 1 ((2)) (2A) 가 ,
 , V_{ref} (6) , V_{ref} (17) V_{ref} .
 , V_{ref} (17) (5) y
 , (412 · 413) (416) , V_H V_L
 (411) () 가 ,
 (V_{+0} V_{+63} V_{-63} V_{-0}) 가 (412 · 413) V_H
 V_H V_L , (411) , (412 · 413) V_H
 , , (411) 가 (412 · 413)
 ,
 9 , REV , V_{com} ,
 ,
 V_L 가 00 (16 ; 10 9 5
 V_H 가 3F (16 ; 10 0) ()
 , 63) ()
 L 가 3F , V_H 가 00 9 5 , V
 V_{com} 가 가 ,
 가 ,
 , (412 · 413) 2 (412 · 413) , $SA \cdot$
 SB $SA \cdot SB$, 2 (412 · 413) , $SA \cdot$
 SB (412 · 413) 2 (412 · 413) , $SA \cdot$
 SB (1)(411) , y
 ,
 $R1$ $R4$ ($R3$) VCC $GND(=0V)$ 가
 GND ,
 ,
 2
 10 12 22 .
 1 (17) (21)
 ,
 (2) 가 , 'High' 'Low' (17) (2) , 10 CTR 1 CTR
 가 , CTR 가 CTR

(41) , (42) (21) 1 CTR (2) .

(41) CTR 가 (411) CTR 'High' 'Low' (414 · 415), (416) , (417),
(41) (41b)((21b) 가)가 .

(414 · 415 · 417 · 21b) 가 .

CTR 'Low' CTR 'High' ,

22 , (381) DIS CTR , 22 VB , DISN

(381) 가 CTR High (Vdd) , NchMOS (3811 · 3812)가 ON
, NchMOS (3813) PchMOS (3814) OFF

, CTR Low (GND) , NchMOS (3811 · 3812)가 OFF ,
, NchMOS (3815) PchMOS (3813) PchMOS (3814) ON .
, NchMOS (3815) PchMOS (3816) OFF ,

(414 · 415 · 417 · 42b) (381) , (381) ,
1 CTR DIS (CTR) 'High' (411)
, (416) (417), (42) (41) (381)(
(414 · 415 · 417 · 42b))가 .

, DIS (CTR) 가 'Low' , (41) , (41)
411), (416) (417), (41) (381)(
(414 · 415 · 417 · 42b))가 . 가 (381)((414 · 415 · 417 ·
42b)) ,

11, 12 , (41) (42) .

(414 · 415 · 417 · 42b) /
, TI(TI 1)가 , () ,
(414 · 415 · 417 · 42b)
(414 · 415 · 417 · 21b) , (414 · 415 ·
417 · 42b)

TFT , (414 · 415 · 417 · 42b)
가 . ,

(57)

1.

가

,

—

,

,

,

•

,

•

,

•

2.

1

•

3.

1 ,

1 ,

2

■

4.

2 ,

•

1

4

,
2 3 , 3 4 , 1 2
,
, 1 R1, 2 R2, 4 R3, 3 R4
,

R1:R2=R3:R4

5.
4 ,
1 4 .
6.
1 ,
 ,
가 . 1
7.
6 ,
1 .
8.
6 ,
1 .
9.
1 ,
 ,
2 .
10.
9 ,
2 .
11.
9 ,
2 가, .
12.
1 ,

. 1 4 ,

3 가 . , 1 4

13.

12 ,

3

14.

12 ,

3 가, .

15.

1 ,

,

, - , 가

16.

1 ,

,

,

,

17.

16 ,

,

가 가 1 ,

가 2 ,

18.

,

, ,

가 ,

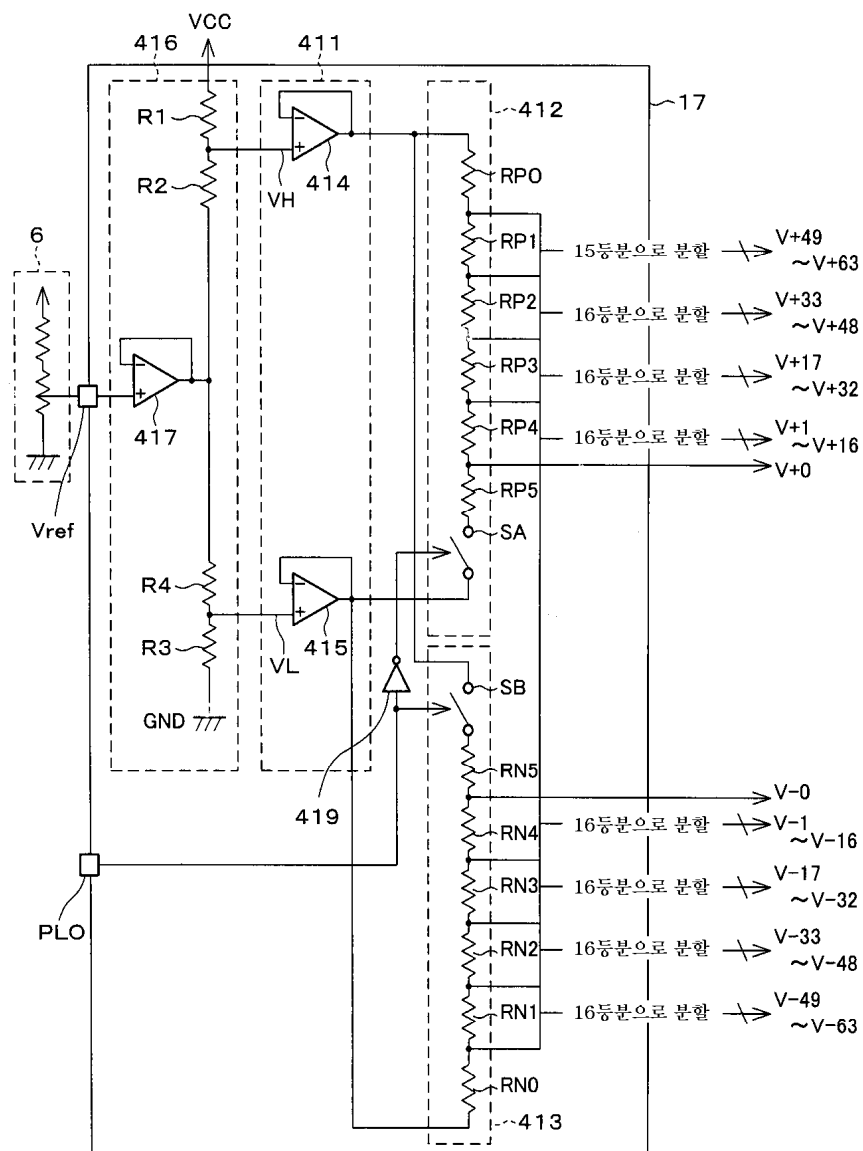
, 가 ,

,

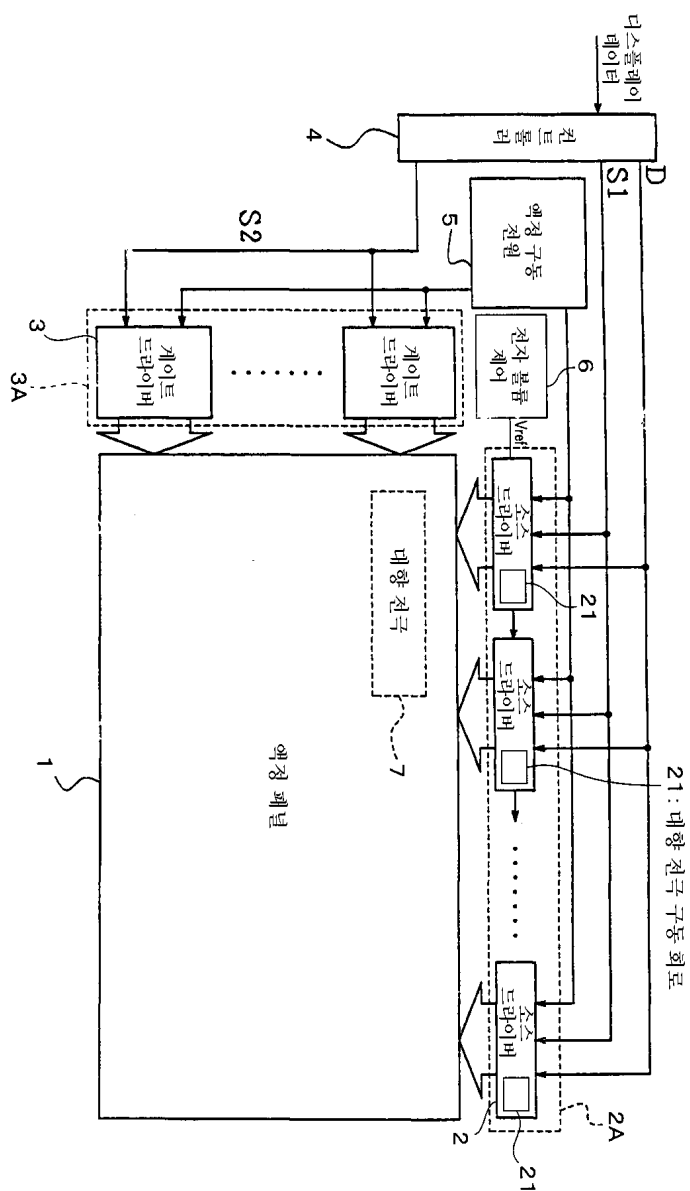
,

-

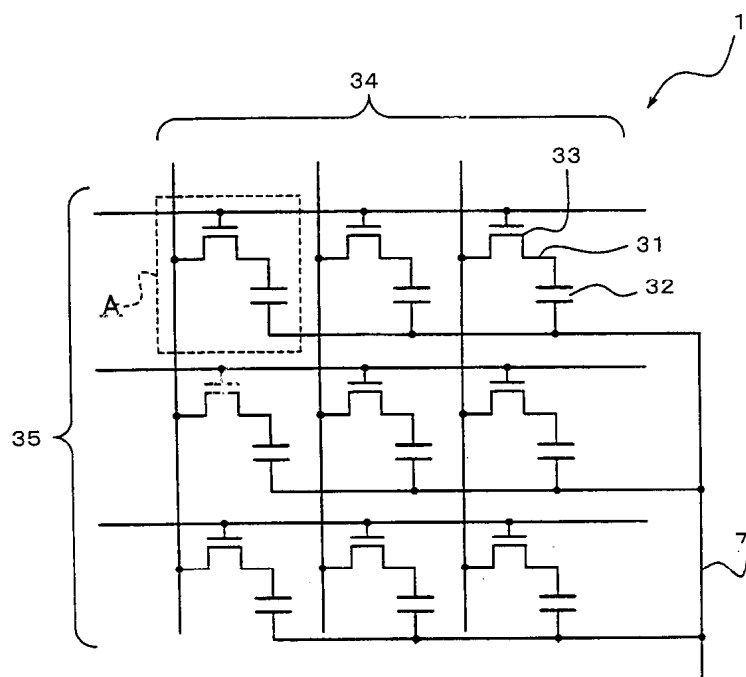
1



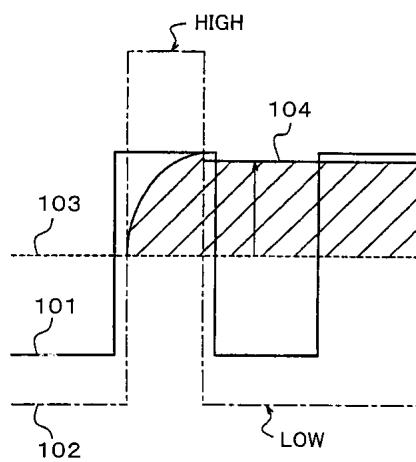
2



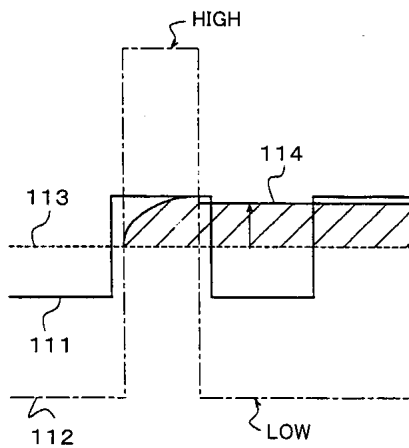
3

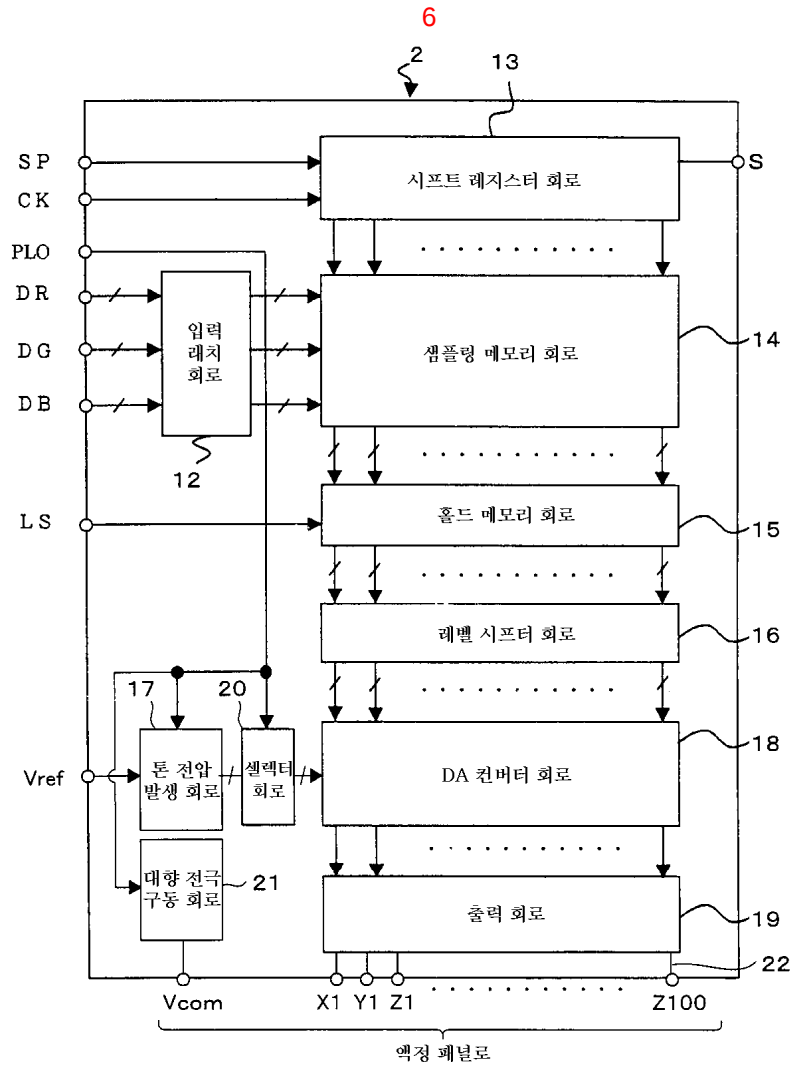


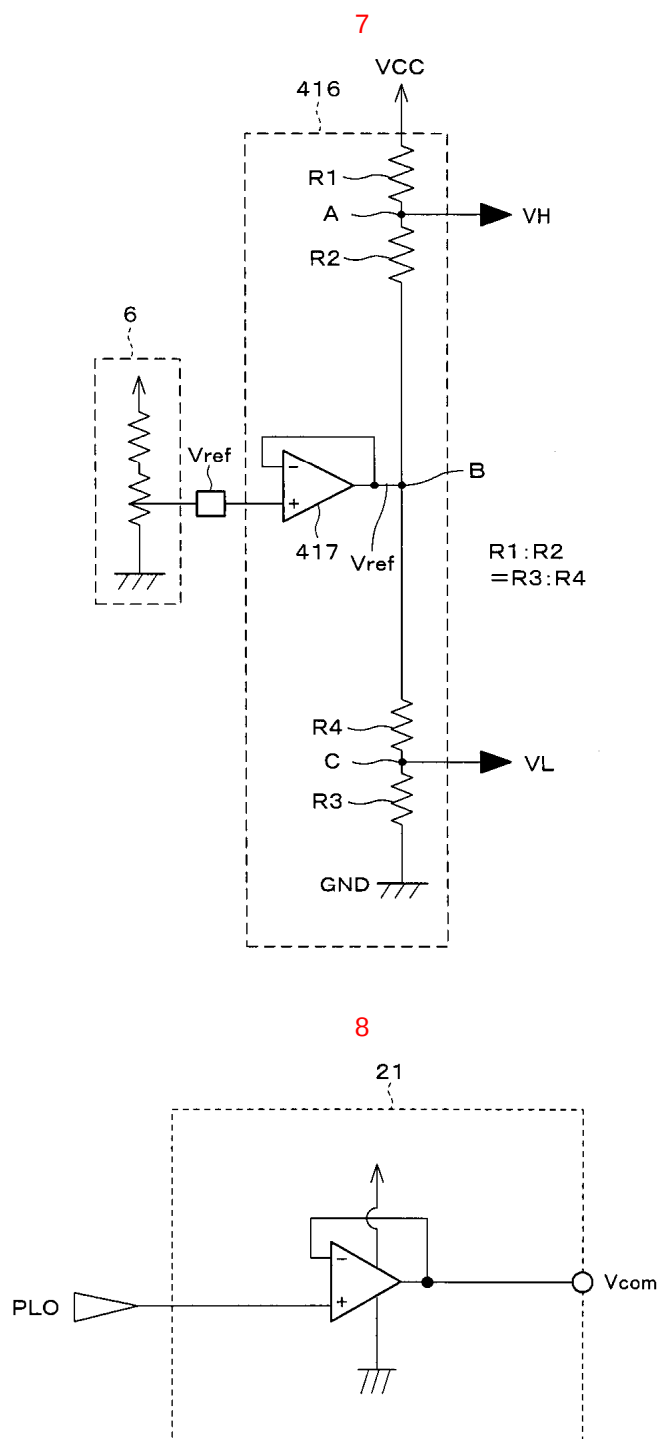
4



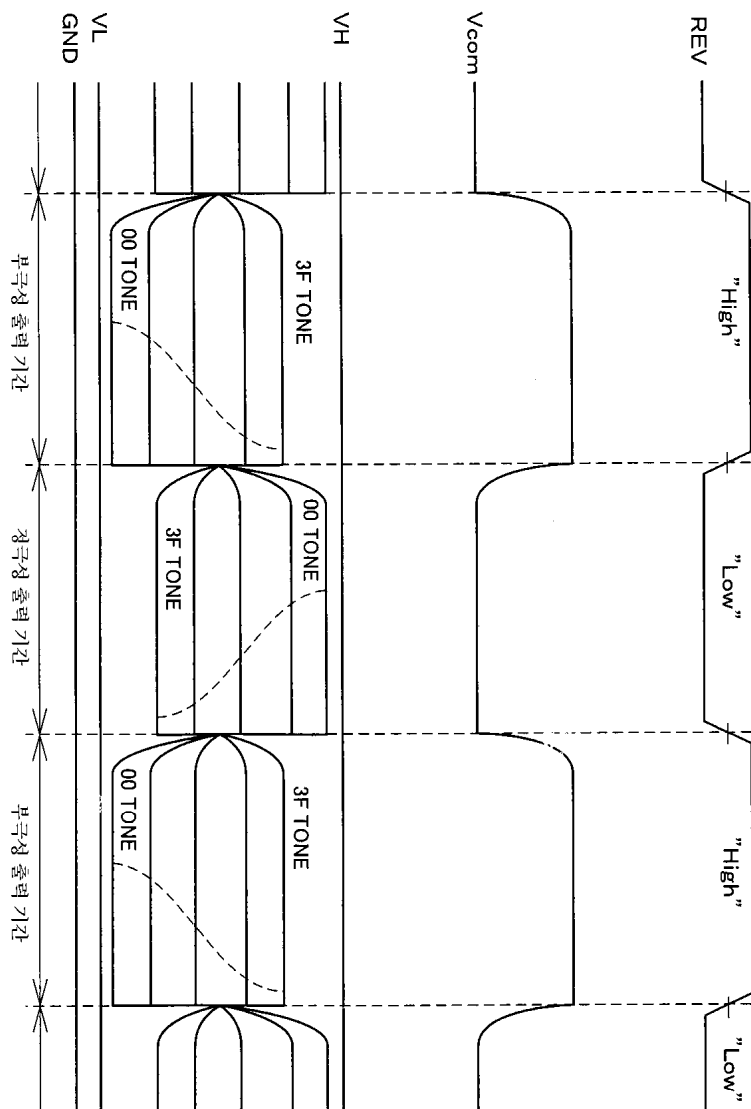
5

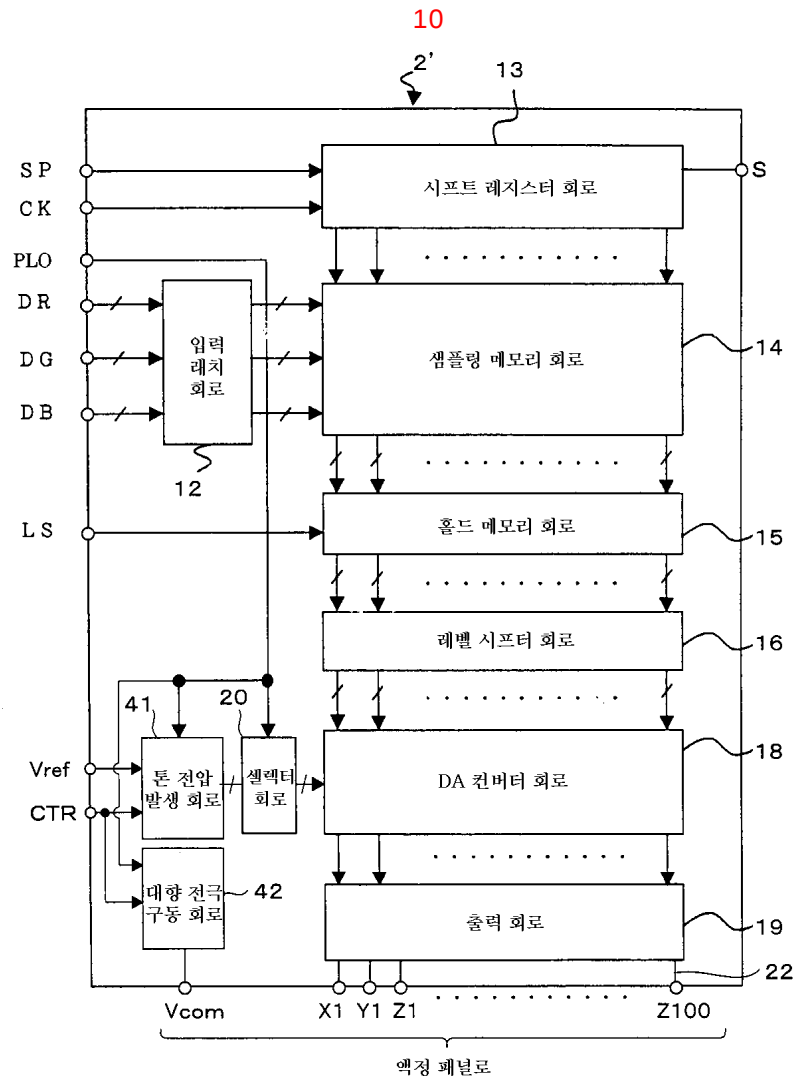




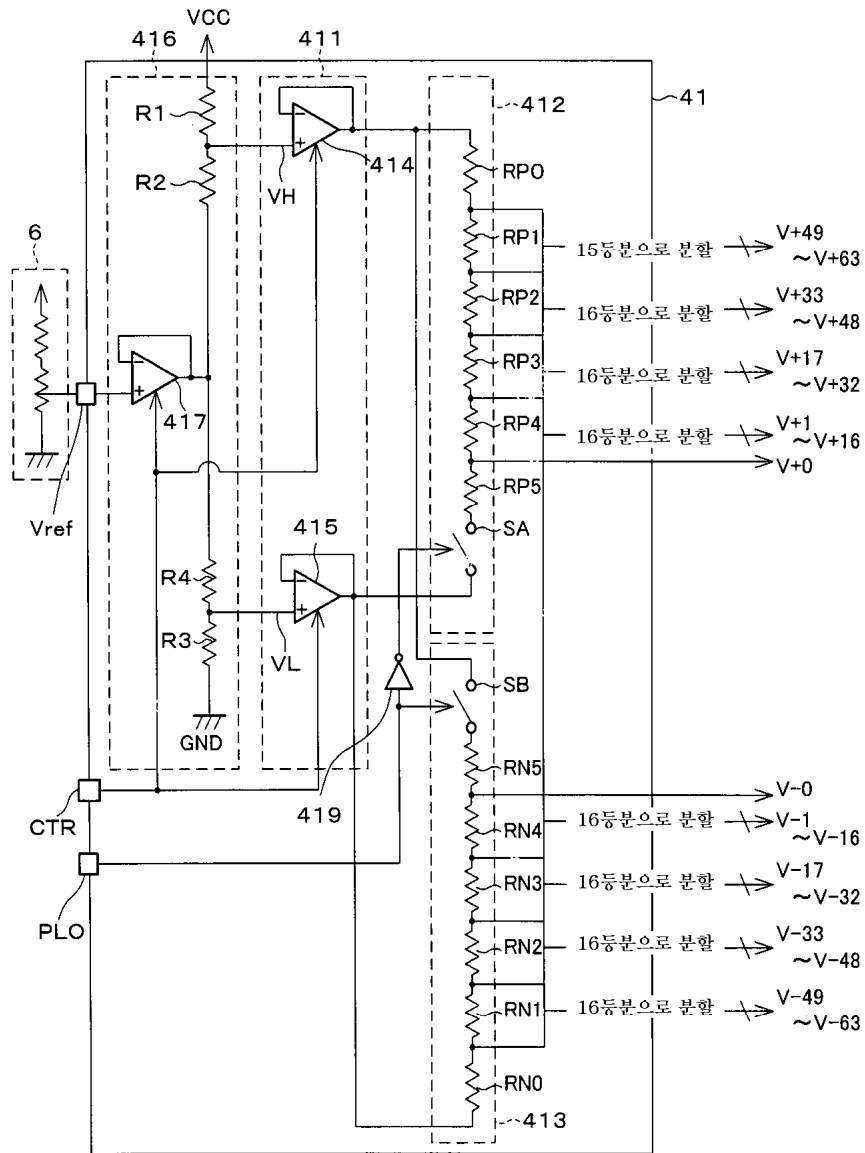


6

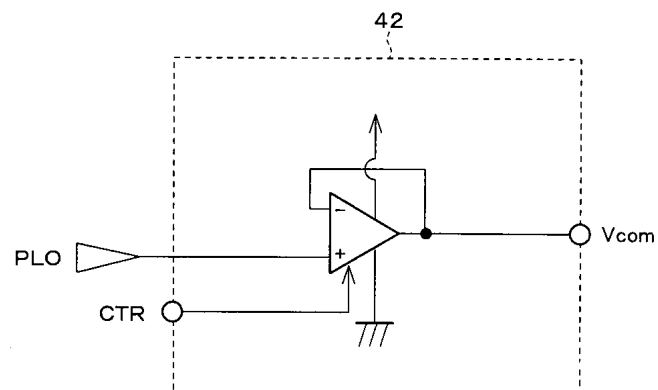




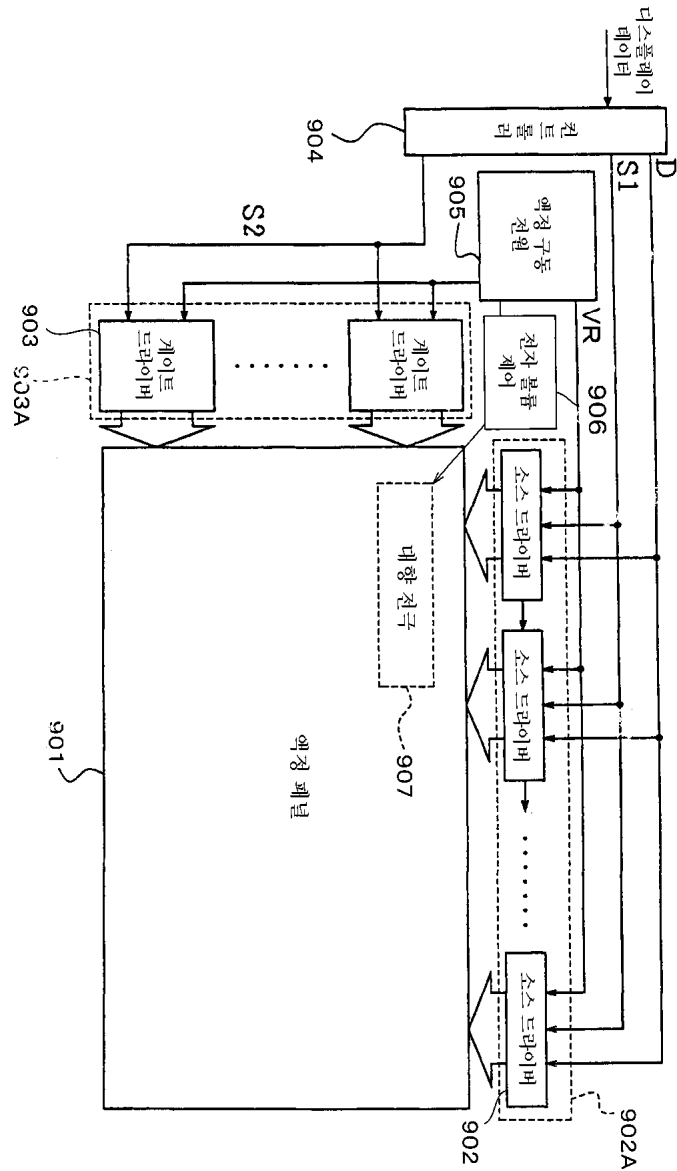
11

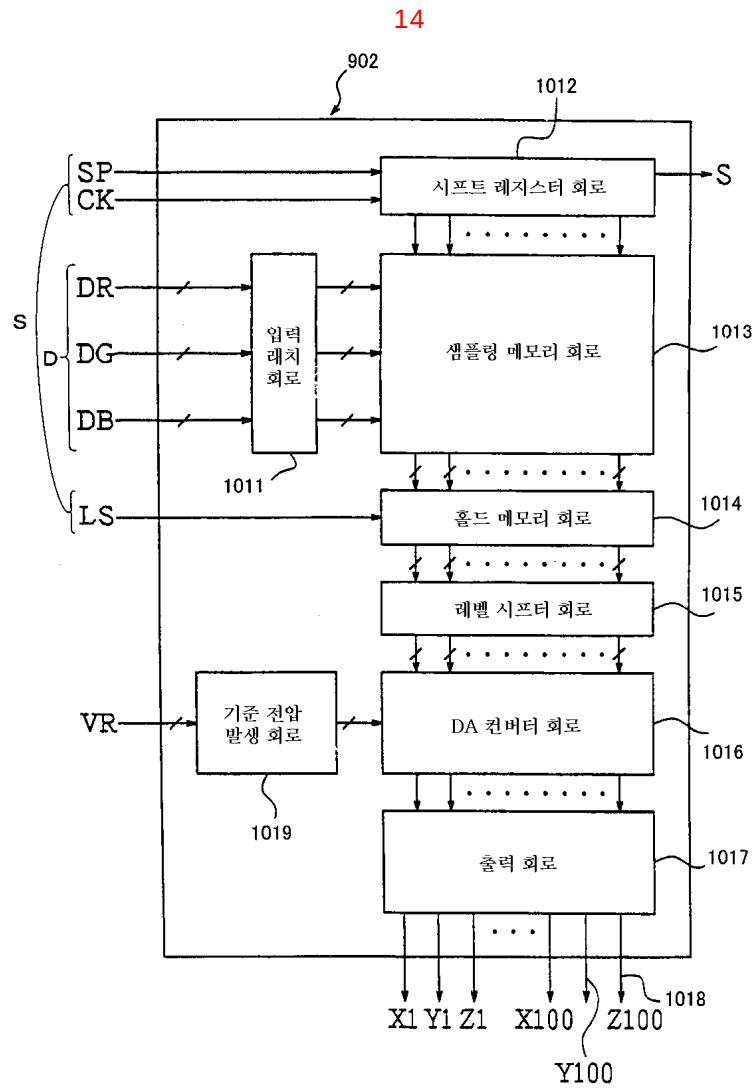


12



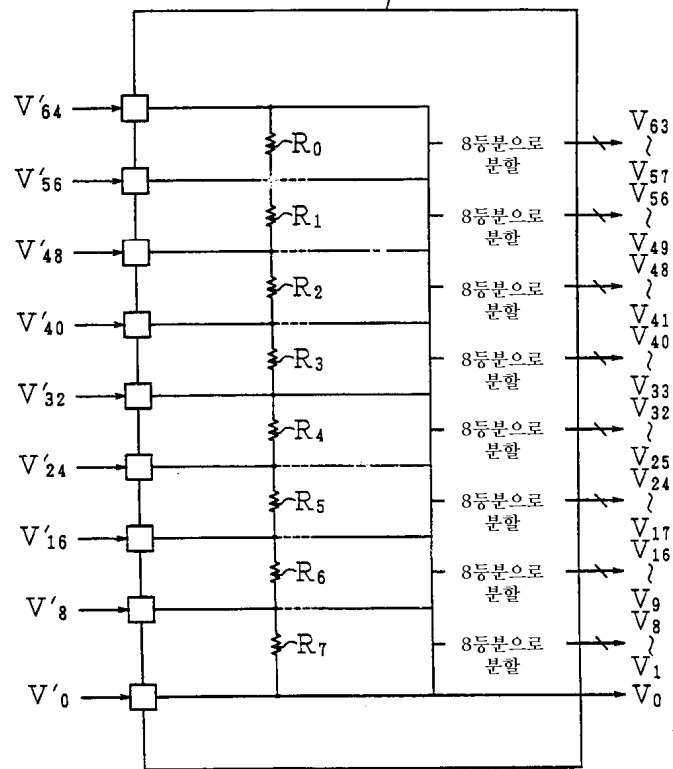
13



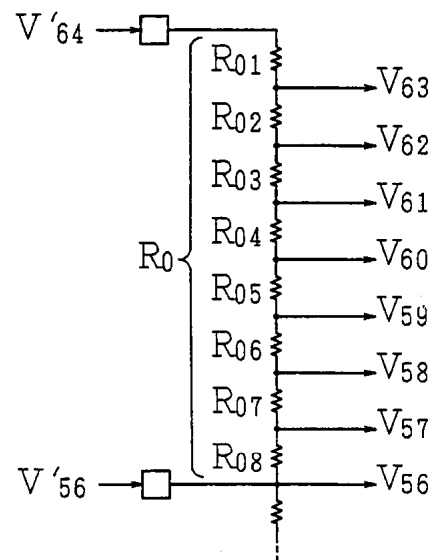


15

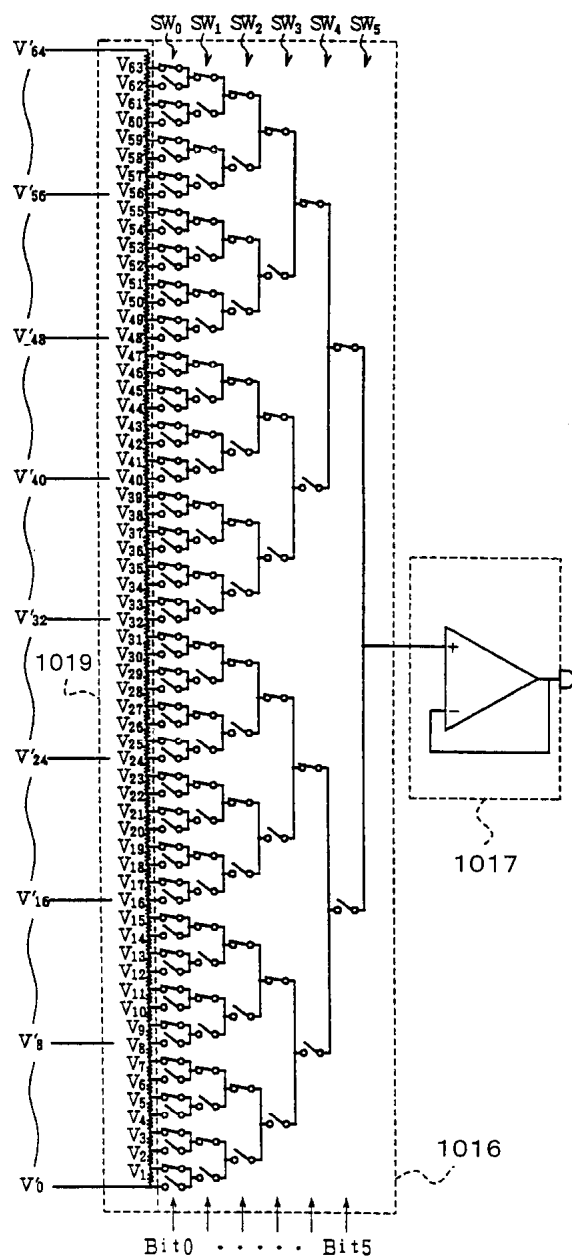
1019



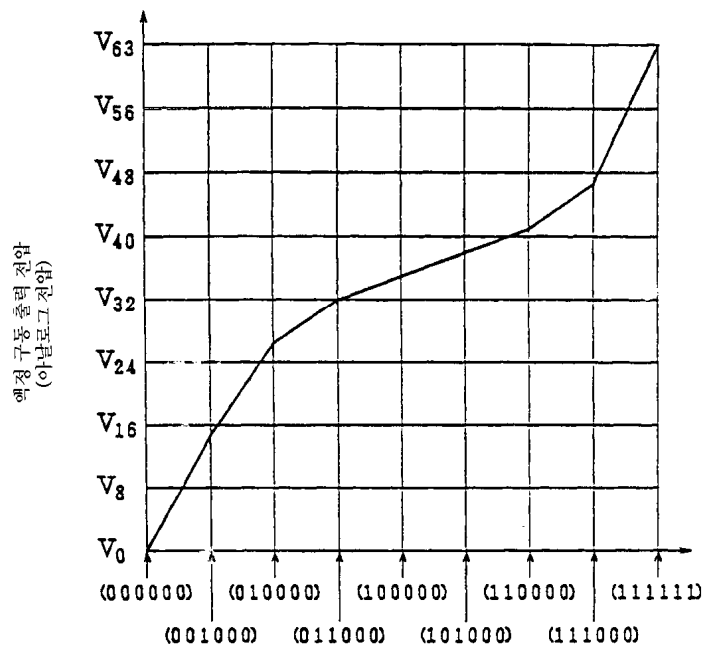
16



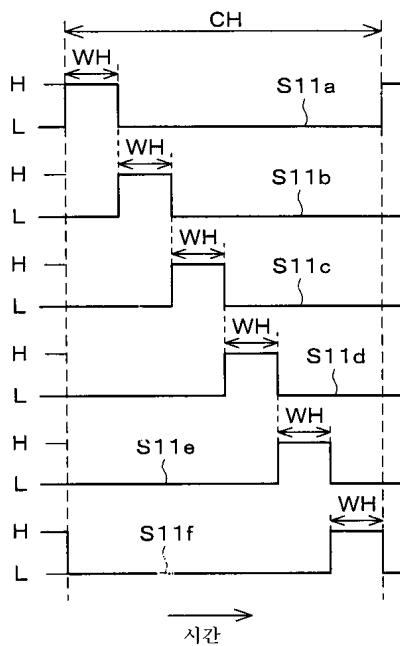
17



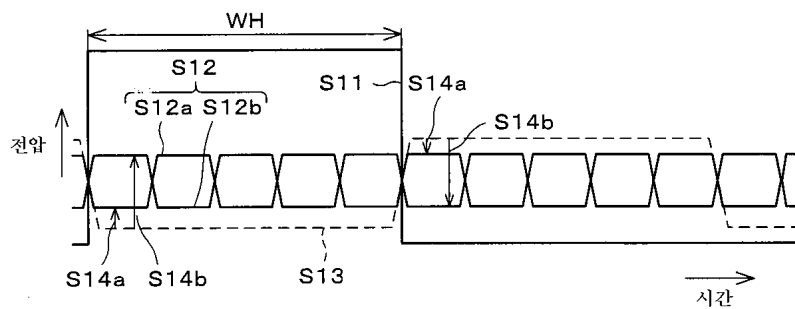
18



19



20



21

(a)

제1 프레임

행 \ 열	1	2	3	4	5
1	+	+	+	+	+
2	-	-	-	-	-
3	+	+	+	+	+
4	-	-	-	-	-
5	+	+	+	+	+
6	-	-	-	-	-



(b)

제2 프레임

행 \ 열	1	2	3	4	5
1	-	-	-	-	-
2	+	+	+	+	+
3	-	-	-	-	-
4	+	+	+	+	+
5	-	-	-	-	-
6	+	+	+	+	+



提供产生电阻分压的调节电路，产生具有在产生灰度电压的电路内的最大电压之间的电压值的灰度数的参考电压，以及关于数据信号线的灰度显示电压的下限电压。在有源矩阵方法的显示面板中，显示驱动器装置包括产生灰度数的参考电压的产生灰度电压的电路，以及DA转换电路和最大电压和下限电压。DA转换电路根据显示数据选择参考电压并在参考电压之间输出。并且，将作为发电灰度电压外部电子量的电路控制的参考电压提供给调节电路。基于参考电压改变下限电压和最大电压。根据液晶材料或液晶面板的特性，用于容易地改变 γ 特性的显示驱动器装置不会增加制造成本，并且由此可以提供使用该显示驱动器装置的显示装置。灰度，极性，脉冲，采样，显示驱动器装置，产生灰度电压的电路。

